EXAMPLE 4   **Using a Decision Tree**

Your company is considering developing one of two cell phones. Your development and market research teams provide you with the following projections.

● **Cell phone A:**

Cost of development: $2,500,000

Projected sales: 50% chance of net sales of $5,000,000

30% chance of net sales of $3,000,000

20% chance of net sales of $1,500,000
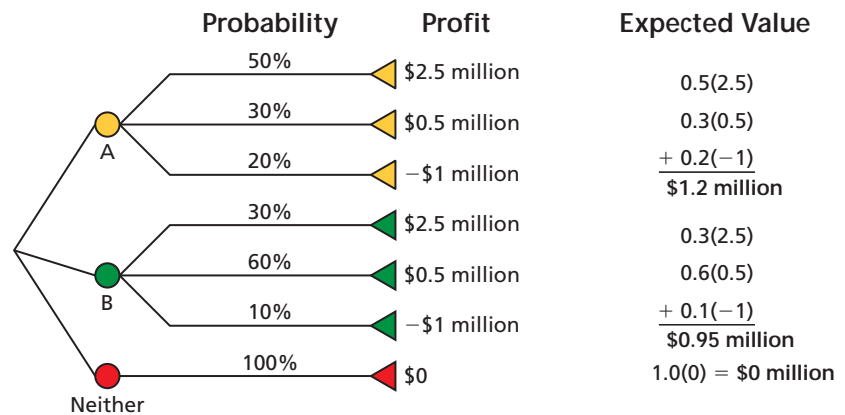
● **Cell phone B:**

Cost of development: $1,500,000

Projected sales: 30% chance of net sales of $4,000,000

60% chance of net sales of $2,000,000

10% chance of net sales of $500,000

Which model should your company develop? Explain.

As of 2010, it was estimated that there were over 5 billion cell phone subscriptions worldwide. With this massive market, the enticement to invest in the development of new and innovative products is strong.

SOLUTION

A *decision tree* can help organize your thinking.

Probability	Profit	Expected Value
50%	$2.5 million	0.5(2.5)
30%	$0.5 million	0.3(0.5)
A 20%	−$1 million	+ 0.2(−1)
		$1.2 million
30%	$2.5 million	0.3(2.5)
60%	$0.5 million	0.6(0.5)
B 10%	−$1 million	+ 0.1(−1)
		$0.95 million
100%	$0	1.0(0) = $0 million
Neither		

Although cell phone A has twice the risk of losing $1 million, it has the greater expected value. So, using expected value as a decision guideline, your company should develop cell phone A.

✓ **Checkpoint**   Help at *Math*.and**Y❂U**.com

Which of the following should your company develop? Explain.

● **Cell phone C:** Cost of development: $2,000,000

Projected sales: 40% chance of net sales of $5,000,000

40% chance of net sales of $3,000,000

20% chance of net sales of $1,500,000

● **Cell phone D:** Cost of development: $1,500,000

Projected sales: 15% chance of net sales of $4,000,000

75% chance of net sales of $2,000,000

10% chance of net sales of $500,000